Reproductive Patterns of Three Species of Octocorals (Families Telestidae, Briareidae, and Plexauridae) in the Vicinity of La Parguera, Puerto Rico

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Abstract

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REPRODUCTIVE PATTERNS OF THREE SPECIES OF OCTOCORALS (FAMILIES TELESTIDAE, BRIAREIDAE, PLEXAURIDAE) IN THE VICINITY OF LA PARGUERA, PUERTO RICO

by

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SUMARIO

Telesto riisei (Telestidae), *Briareum asbestinum* (Briareidae) y *Muriceopsis flavida* (Plexauridae) fueron recolectados cada dos semanas por espacio de un año con el propósito de determinar si existen diferencias en las estrategias reproductivas empleadas. Las colonias fueron examinadas para determinar el sexo y el tamaño de los espermarios y oocitos. También se determinó el número de oocitos maduros en cinco pólipos de cada muestra. Las tres especies de octocorales estudiadas presentaron sexos separados. Sólo 1% de las colonias examinadas de cada especie tenía pólipos con gónadas de ambos sexos (hermafroditos). *B. asbestinum* y *M. flavida* tienen un ciclo reproductivo anual; oocitos maduros encontrándose desde marzo hasta julio y desde diciembre hasta marzo, respectivamente. Colonias de *T. riisei* se reproducen durante todo el año. Las colonias macho y hembra de *T. riisei* y *M. flavida* están sincronizadas. Este mechanismo asegura una tasa de fertilización más alta. *B. asbestinum* presenta oocitos y espermarios de mayor tamaño y el major número de oocitos maduros por pólipo. El número de oocitos maduros por pólipo tiende a disminuir con el aumento en profundidad en poblaciones de *M. flavida* y *B. asbestinum*. Las poblaciones de *M. flavida* en aguas profundas presentan oocitos maduros antes que aquellas en aguas más llanas. Las poblaciones de *B. asbestinum* en aguas llanas presentan oocitos maduros antes que aquellas en aguas más profundas. La temperature y el ciclo lunar son factores importantes que regulan la reproducción de algunos octocorales en el Mar Caribe.

Colonias de *M. flavida* se reprodujeron en el laboratorio. Las larvas medían aproximadamente 1 mm de largo y carecían de zooxantelas. Las plánulas se fijaron en dos días. Los pólipos completaron su desarrollo en aproximadamente siete días. Se encontraron zooxantelas en los pólipos a las dos semanas de haberse fijado.

Hubo reclutamiento de *T. riisei* durante todo en año. En *B. asbestinum* el major número de colonias jóvenes se encontró en julio y septiembre, correspondiendo al período inmediatamente después de su ciclo reproductivo. Colonias jóvenes de *M.*

flavida sólo se encontraron durante el mes de julio. La mortalidad de las colonias jóvenes de *B. asbestinum* se atribuye a sofocacíon causada por la alta sedimentación en el área.

ABSTRACT

Telesto riisei (Telestidae), *Briareum asbestinum* (Briareidae) and *Muriceopsis flavida* (Plexauridae), each having a different growth form and occupying different microhabitats, were sampled and their gonads examined semimonthly during the course of one year in order to determine if different reproductive tactics were employed. Colonies were sexed; oocytes and spermaries were measured and mature ova were counted in each of five polyps per sample. All three species are considered to be dioecious with approximately one percent of the total number of each species being hermaphrodites. *M. flavida* and *B. asbestinum* had an annual reproductive cycle, ripe females being found from December through March and from March through July, respectively. *T. riisei* was found to reproduce throughout the year. Sexes were synchronized in colonies of *T. riisei* and *M. flavida,* a mechanism which ensures a greater fertilization rate. *B. asbestinum* was found to have the largest spermary and ova diameters and the largest number of mature eggs per polyp. The number of mature eggs per polyp tended to decrease with increasing depth in populations of *M. flavida* and *B. asbestinum.* Ripe female colonies were found earlier in the year in deep water populations of *M. flavida* than in shallow water ones. In *B. asbestinum,* populations in shallow water had ripe ova earlier in the year than populations in deeper water.

Colonies of *M. flavida* spawned under laboratory conditions. Planulae were approximately 1 mm in length and lacked zooxanthellae. They settled within two days and metamorphosed into fully developed polyps in approximately seven days. Infection with zooxanthellae did not occur until two weeks after settlement.

Recruits of *T. riisei* in one-square-meter quadrat were found throughout the year. In *B. asbestinum,* the greatest number of recruits were found in July and September, corresponding to the period of time after its reproductive season. The only time when recruits of *M. flavida* were found was in July. Mortality of recruits of *B. asbestinum;* was usually attributed to smothering by heavy sedimentation.